

**CLAIMS**

1. Non-homogeneous adsorbent constituted by at least one crystal formed from a core and at least one continuous outer layer characterized in that the core of said adsorbent has a volume adsorptive capacity representing at least 35% of the volume of the adsorbent and the outer layer has a diffusional selectivity greater than 5.
2. Non-homogeneous adsorbent according to claim 1 characterized in that the volume adsorptive capacity of the core represents at least 40% of the volume of the adsorbent.
3. Non-homogeneous adsorbent according to claim 1 or 2 characterized in that the diffusional selectivity is greater than 10.
4. Non-homogeneous adsorbent according to one of claims 1 to 3 characterized in that the adsorptive capacity of the core is greater than that of the continuous outer layer.
5. Non-homogeneous adsorbent according to one of claims 1 to 4 characterized in that the core is partially or totally empty.
6. Non-homogeneous adsorbent according to one of claims 1 to 4 characterized in that the core contains a crystallized micro- or mesoporous solid.
7. Non-homogeneous adsorbent according to one of claims 1 to 6 characterized in that the continuous outer layer contains a crystallized microporous solid.
8. Non-homogeneous adsorbent according to claim 6 characterized in that the core has a crystal size between 0.1  $\mu\text{m}$  and 0.4 mm.
9. Non-homogeneous adsorbent according to claim 8 characterized in that the core has a crystal size between 0.2  $\mu\text{m}$  and 50  $\mu\text{m}$ .

10. Non-homogeneous adsorbent according to one of claims 1 to 9 characterized in that the continuous outer layer has a thickness between 0.01 and 100  $\mu\text{m}$ .
- 5 11. Non-homogeneous adsorbent according to claim 10 characterized in that the continuous outer layer has a thickness between 0.1 and 10  $\mu\text{m}$ .
12. Non-homogeneous adsorbent according to one of claims 1 to 11 characterized in that the core and said continuous outer layer are zeolitic solids.
- 10 13. Non-homogeneous adsorbent according to one of claims 1 to 12 characterized in that it is in spherical or cylindrical form.
14. Non-homogeneous adsorbent according to claim 13 characterized in that the radius of the core represents at least 40% of the total radius of the adsorbent.
- 15 15. Use of an adsorbent according to one of claims 1 to 14 in a gas- or vapour-separation process.
- 20 16. Use of an adsorbent according to one of claims 1 to 14 in a liquid-separation process.